DOCUMENT RESUME

ED 078 652 EM 011 189

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TITLE	A Report on the Evaluation of OECA's Simulation Game "Operation Moonvigil" Number 13.
INSTITUTION	Ontario Educational Communications Authority, Toronto. Research and Development Branch.
PUB DATE	Feb 72
NOTE	28p.; See Also EM 011 190
EDRS PRICE	MF-$0.65 HC-$3.29
DESCRIPTORS	*Educational Games; *Evaluation; Games; Grade 5; Grade 6; Grade 8; Grade 9; *Group Dynamics; Interaction; Program Descriptions; *Role Models; *Simulation; Student Attitudes; Teacher Attitudes
IDENTIFIERS	Canada; Ontario; *Operation Moonvigil

ABSTRACT

In April 1971 the Ontario Educational Communications Authority evaluated its simulation game "Operation Moonvigil", an action and reflection process for students in grades five through nine, designed to allow them to discover how and why institutions come into being and interact with individuals. Questionnaires were distributed, student reports of the game were collected, and observers watched classroom activities. The majority of the teachers felt "Operation Moonvigil" was successful, that they would use it again, and that they would recommend it to other teachers. Nearly 80% of the students favored it. Pre-game teacher workshops, accessory materials, and teacher involvement activities were seen as useful. Knowledge gained from the evaluation was felt to be helpful to the future modification of gaming experiences, particularly in the area of aiding teachers and students to adapt to the new modes of teacher-student interaction which gaming requires. (PB)

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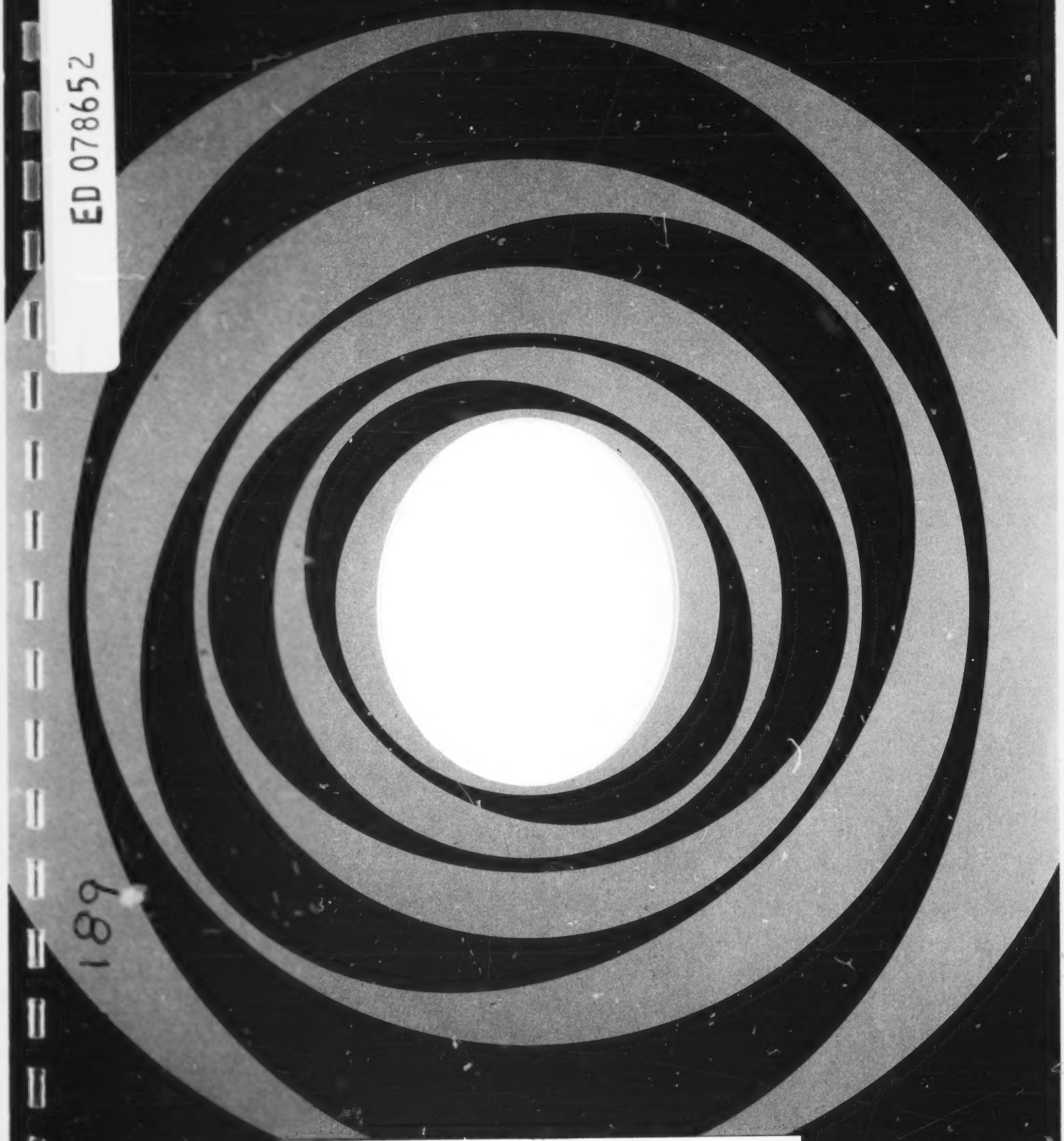
Papers and Reports Concerning Educational Communications

ED 078652



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A REPORT

ON THE EVALUATION

OF OECA's

SIMULATION GAME

"OPERATION MOONVIGIL"

NO: 13

February 1972

Prepared by Anna Prodanou

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INTRODUCTION

In April 1971 The Research and Development Branch of The Ontario Educational Communications Authority undertook a project intended to study one of OECA's experimental programmes, the simulation game entitled "Operation Moonvigil".

The project was carried out in two phases. A preliminary evaluation took place in May and June in order to test the design elements of the simulation and effect certain necessary changes. A more extensive assessment of the programme, based on a much wider sample of user response took place at the time of its first broadcast in November.

This paper seeks to review some of the major findings of the two evaluations.

First, a brief look at simulation games in general, and an introduction to "Operation Moonvigil".

Simulation

The simulation game is a simplified operational model of real-life situations. Recognition and formal implementation of the simulation game in its present format as a formal learning tool began about a decade ago. However, the function of games in socialization

had occupied social thinkers as early as Herbert Spencer.

More recently there has occurred a gradual process of recognition of the potential learning function of games:

> ". . . from the initial recognition of their inherent attractiveness, and their ability to capture interest and commitment; to recognition of the way in which favourite games mirror their surrounding environment or society; to recognition of the way in which certain types of games are particularly appropriate at particular stages in children's development."(1)

Operation Moonvigil

"Operation Moonvigil" is a simulation game designed by The Ontario Educational Communications Authority. It is a three week action and reflection process for students in grades five to nine. It is designed "to allow students to discover how and why institutions come into being, to see some elements involved in the interaction between individuals and institutions"(2) . . .

The elements of Moonvigil consist of eight five-minute television programmes, an Emergency Procedures Kit composed of various support materials, and a Teacher's Guide.

The setting of the simulation is the Copernicus Crater on the moon, the time is ten years hence. The crew of a lunar research vehicle is unable to leave the moon due to a serious malfunction on board the spacecraft. While waiting for rescue the crew must provide for

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(1) Simulation Games in Learning, S.S. Boocock and E.O. Schild (eds.) Sage Publications Inc. Calif. 1968. Pg. 61.

(2) Teacher's Guide Operation Moonvigil. OECA.1971 pg.1

their basic survival, communicate with Mission Control, and maintain their health and morale.

These basic survival tasks constitute the rationale for the division of the crew into three groups. The Blue-Survival Group is mainly responsible for food rationing. The Red-Communications Group is responsible for receiving, decoding and sending messages to and from Mission Control. The Orange - Health and Morale Group is responsible for health and morale-building activities and the hospitalization procedures.

Each day, via television, the crew receives its survival directions from Mission Control. The broadcast is preceded by five minutes of preparatory activity, followed by a half hour of task completion.

An emergency Procedures Kit contains the necessary materials for daily task-completion.

Each Moon Day is designed to present the crew with a new challenge, and new experiences in institution building.

For instance, in preparation for rescue, the crew must conduct a Flight Simulation Exercise. Radioactivity contaminates some of the food supplies sending certain members into a hospital. Participants are asked to undertake and master another's job. These constitute some of the game's dramatic elements.

The chief personalities involved in Moonvigil are: the crew of scientists on the moon (the students), the teacher as the Debriefing Officer, and, via television, the earth broadcast personnel - Mission Control, Loopie - the computer command consul, the Skylab crew, and the news announcers.

THE PRELIMINARY EVALUATION

In May 1971, production on "Operation Moonvigil" had been completed and the prototype Kit and Teacher's Guide were designed. It was important to learn whether these simulation components worked in the classroom in the intended fashion.

Procedures

Three volunteer classrooms participated in the preliminary evaluation; two from Toronto and one from St. Catharines. Two observers were present in each school during the daily gaming activities. The observers included members of OECA's Programming and Research and Development staff, and interested persons from the Department of Education and the School Boards.

The following schedules were drawn up to gather data: a Daily Timeline, which recorded minute to minute activities of each 'crew'; Crew Observation Schedule, which followed the nature of procedures and mechanics of the game; Crew Interview sheets which sought to collect the students' reactions to Moonvigil. (In the course of the testing all the students were interviewed). In addition, all of the participating teachers were asked to submit daily Teacher Evaluation forms which asked for feedback pertaining to the elements of the game.

Findings

The findings, recommendations, and changes which emerged as a result of the May testing affected the following components of the game:

1) the setting and the players' identity

2) the broadcasts

3) the group procedures

4) the teacher's role.

It became apparent, from the testing, that the original brief scenario introducing "Operation Moonvigil" to the students was insufficient to establish the setting and the identity of the players. It was decided to introduce a variety of pre-involvement activities to precede the actual gaming activities, and to set the scene of the crash-landing via the first television broadcast.

It was learned that certain directions conveyed to the crew via television were unsuccessful in achieving the intended results with the students, e.g., group division procedures, and the Flight Navigation Exercise. Appropriate changes were effected in the broadcasts.

The testing sessions pointed out some difficulties experienced by the players in following the game's instructions, e.g. decoding procedures. The student interviews showed that the players would have liked more tasks to perform during the game. Both these observations were taken into account in refining the instructional materials in the Emergency Procedures Kit.

In accordance with the teachers' stated opinion, adjustments were made in the Teacher's Guide. A more detailed account of daily broadcast content and gaming procedures came to be included in the Guide, as well as some helpful instructions intended to aid the teachers in their observations.

The recognition of the importance of the teacher's role to the success of the simulation led to the consideration of the most appropriate methods for instructing the teachers in the use of "Operation Moonvigil".

It was decided that regional workshops would be conducted in order to acquaint the interested teachers with simulation techniques.

THE EVALUATION AT THE TIME OF THE FIRST BROADCAST

"Operation Moonvigil" had its first air date on November 15th. It was broadcast three times a day over OECA's Channel 19 and the provincial network of the CBC.

In October the Research and Development Branch engaged an independent Consultant, Dr. A.E. Virgin, of Research and Evaluation Services, to report to the Authority on the use of the simulation in the schools of Ontario during its first telecast.

The report has now been submitted to the OECA. It runs well over 200 pages in length.(3) The procedures used and the major findings are summarized below.

Procedures

First, a description of the instruments developed and samples selected to gather data.

A Teacher Questionnaire comprised of 50 items was designed for the evaluation. The questions were both open and closed-ended. Information was sought in some of the following areas: Opinion of OECA workshops, opinion of Moonvigil materials, the nature of the pre-involvement, debriefing and reflection activities, ratings of success of the game for each Moon Day, ratings of pupil involvement during the game, teacher's role, future use of Moonvigil.

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(3) A limited number of copies are available upon request.

This questionnaire was sent to 90%[4] of the teachers who had placed orders for the Moonvigil Kit with OECA's Publications Section by November 10.[5] The number of questionnaires sent out was 239. The report analyses 80 or 30% of those which were returned by a designated date. A follow-up letter sent by The Research and Development Branch which met with a 52% response rate from the entire sample, indicated that 14% of the teachers would return the questionnaires shortly. (The most quoted reason was that the programme was videotaped to be viewed several days later).[6] 23% of the responding teachers indicated that they would be participating in the simulation during the second broadcast date scheduled for mid-January.

The Pupil Questionnaire consisted of 13 items, the majority of which were open-ended. Among other things, pupils were asked to indicate their likes and dislikes of Moonvigil; why they thought Mission Control created three groups; what they would do if they found themselves in a comparable situation on a deserted island and what they thought they were supposed to learn from playing Moonvigil.

Six pupil questionnaires were sent out along with each Teacher Questionnaire to the sample described above. The teacher was asked to select six pupils, one from each Red, Blue, and Orange group of each of the two crews to complete these questionnaires. A total of 1296 questionnaires were distributed; 229 of the 480 returns form the basis of the analysis.

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(4) Some orders were made in bulk by the School Boards and it was virtually impossible to identify 100% of the participating teachers in time for this evaluation.

(5) Many of the participating teachers were identified for us by the Regional Learning Materials Consultants of the Dept. of Education. We thank them for their co-operation.

(6) To date of the writing of this paper the return rate has reached 50%.

The Pupil Diaries were completed by a different and smaller sample of pupils. These diaries were blank, unstructured booklets. The children were asked to write as much as they wanted in their diaries after the completion of each Moon Day. They were asked to express their feelings and ideas about Moonvigil, and to illustrate these in pictures if they so wished. They were asked to speak frankly, as if talking to a friend, and to keep the diaries private.

Ten sets of 6 diaries were sent out to a regionally distributed sample of schools, a part of the above sample of 239 classrooms. Thirteen sets of 6 diaries were distributed in the observed schools described below. Of the 138 diaries distributed, 114 or 83% formed the basis for analysis.

The Observers' Daily Record. Daily observation schedules were developed to cover the gaming debriefing and reflection activities of Operation Moonvigil. Each schedule contained a brief summary of events for each day and a list of activities to watch for during the 45 minute period of observation. Activities typically included in these reports were descriptions of the teacher's role, any evidence of the game being modified, evidence as to the children's enjoyment and involvement in the game. The observation records for each day were individually submitted to OECA by each observer. More detailed reports were prepared by all observers at the conclusion of the game.

Thirteen schools were selected from the Metro Toronto region and agreed to the presence of an observer during the simulation activities. The selected classrooms represented various grade levels, inner-city and suburban, separate and public schools. The 13 non-participant observers were selected by the Consultant from among 70 eligible applicants. They were given a training session which included the theory of perception and its application to systematic observation, review of Moonvigil and the role of the observer, and an examination of the observers' daily record forms.

Findings

The major findings of the study conducted during the November broadcast of "Operation Moonvigil" are presented below.

Responses to the Teachers' Questionnaire show that the simulation was conducted primarily in grades 5 to 8 with grades 6 (22.5%) and 8 (20%) predominating. Grade 9 accounts for 3.8% of users and grade 10 for 1.3%.

The majority of the teachers who chose to participate in Moonvigil described themselves as "moderately progressive" - 46%, and moderately traditional-20%. "Very progressive" accounted for 7% of the answers, "uniquely different" for 3%, and, 4% gave no answer.

It is of interest to note that for almost half of the teachers 45%, watching Moonvigil was one of the very few times that they had used television in their classrooms.

Although over half of the teachers 55% indicated that they had participated as a player in a simulation game, the majority had never conducted a simulation game in their classrooms prior to playing Moonvigil. It should also be noted that 53.7% of the teachers attended a workshop sponsored by OECA and participation in a simulation game was part of the workshop activities.

Teachers offered a variety of reasons for their decision to use Moonvigil with their class. The largest category representing 28.8% of the responses indicated the wish to introduce their pupils to a new way of teaching. Curiosity and experimentation accounted for 16.3% of the reasons, the same number made the decision upon the request of a Principal or a Superintendent.

Fifty four percent of the teachers who returned questionnaires had attended a workshop sponsored by OECA. Of those who attended a workshop, 70% indicated very strongly that the workshop helped to give them confidence for using Moonvigil, and 60% indicated that they felt the workshop increased their competence in using the simulation.

The most helpful features of the workshops seemed to be the increased familiarization with the programme materials and the game, and the acquired ability to understand the students' roles and feelings. Most comments related the workshops' least helpful features focused on the instructions regarding debriefing.

The Emergency Procedures Kit and its materials found strong support among 77% of the respondents. Sixteen percent indicated that they felt the game was too juvenile or the instructions or contents were poor.

The most common pre-involvement activities employed by the teacher consisted of class discussions, and the making and gathering of materials, with the latter activities representing the greatest involvement on the part of the students.

When asked "Now that you have played the game, what might you have done, but did not, in the preparation stages which would have facilitated playing the game?" The most cited response was - "played a similar simulation game and involved the class in role playing activities."

Teachers were asked to indicate in terms of the objectives given in the Teacher's Guide, the degree of success of the class in pre-involvement activities with reasons for their rating.

RATING OF PREINVOLVEMENT(7)

	Very Successful				Complete Failure	No Answer
Number	28	25	15	8	0	4
Percent	35%	31%	19%	10%	-	5%

Forty-nine gave reasons for the above ratings. Twenty-five noted that the success was due to high interest on the part of the children, while eight teachers stated that they received their kits late and hence their pre-involvement activities were not successful.

The Teachers' Guide contained statements of objectives to be achieved for each Moon Day of "Operation Moonvigil". Teachers were asked to indica e the degree of success achieved each day on the basis of these objectives. The following ratings emerged.

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(7) Table reproduced from An Evaluation of "Operation Moonvigil" prepared by Dr. A. E. Virgin, for the Research and Development Branch of the Ontario Educational Communications Authority, January 1972, page 117.

RATINGS OF THE SEVEN MOON DAYS[8]

	Very Successful				Complete Failure	No Answer
Moon Day 1	16 20%	28 35%	21 26%	10 13%	0	5 6%
2	27 34%	22 28%	25 31%	1 1%	0	5 6%
3	15 19%	38 48%	17 21%	5 6%	0	5 6%
4	15 19%	24 30%	18 23%	15 19%	3 4%	5 6%
5	24 30%	18 23%	20 25%	10 13%	4 5%	4 5%
6	12 15%	25 31%	24 30%	8 10%	3 4%	8 10%
7	11 14%	24 30%	17 21%	16 20%	14 18%	8 10%

On a group basis, the degree of success was relatively high during the first three days, followed by three days of moderate success. The seventh day, however, left much to be desired, in that 30 of the 80 teachers selected "complete failure" or the adjacent rating to describe the success on that day, while 35 selected "very successful" or the adjacent category for that day.

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(8) ibid. p. 118

In elaborating upon these ratings teachers explained that their decision was based on the degree of either interest and involvement or boredom demonstrated by their students, as well as the latters' ability to conduct activities and follow instructions of the simulation.

A similar type of rating was requested of the teachers for the debriefing and reflection activities. The teachers were asked to determine ratings on the basis of the objectives stated in the Teachers' Guide.

RATING OF DEBRIEFING AND REFLECTION(9)

	Very Successful				Complete Failure	No Answer
Debriefing	21 26%	27 34%	16 20%	4 5%	0	12 15%
Reflection	8 10%	21 26%	13 16%	9 11%	1 1%	28(*) 35%

Likewise a rating of the degree of the students involvement during debriefing was requested.

RATING OF PUPIL INVOLVEMENT DURING DEBRIEFING(10)

	Very Involved				Not at all Involved	No Answer	
Number	19	32	21	5	0	3	80
Percent	23.8%	40.0%	26.3%	6.2%	-	3.8%	

(9) ibid p. 122
(*) These teachers were still carrying activities at the time of response.
(10) ibid p. 122

Slightly more than 50% of the respondants indicated they intended to have three or more reflection days.

In response to what was done to date during reflection and what future projects might be expected, the majority of the teachers offered responses in the area of "discussions and concepts" - 18%, and "discussion of specific institutions" 16%.

In response to the question "What kinds of conclusions did the class come to during debriefing and reflection sessions", the following patterns emerged.

GENERALIZATIONS AND CONCLUSIONS REACHED BY THE CLASS(11)

Response	Number and Percent Making Comment	
Need for organization during playing of game/need for co-operation	26	32.2%
Need for institutions in society	20	24.8%
Didn't see need for groups	3	3.7%
Game was silly, childish	2	2.5%
Other	4	4.9%
No Answer	26	32.2%
	81 (*)	

(11) ibid p. 125

(*) more than one response

A large majority of classes who had reached the reflection stage did discuss the concept of institutions.

CONCEPT OF INSTITUTIONS DISCUSSED (12)

	Yes	No	Partially	Not discussed yet	Other	No Answer	
Number	35	8	5	8	1	23	80
Percent	43.8%	10.0%	6.2%	10.0%	1.3%	28.8%	

And the following numbers identified other institutions.

OTHER INSTITUTIONS IDENTIFIED AND DISCUSSED (13)

	Yes	No	No Answer	
Number	36	9	35	80
Percent	45%	11.3%	43.8%	

Seventy two percent of the teachers felt that their pupils had achieved the objectives of "Operation Moonvigil" contained in the Teachers' Guide.

ACHIEVEMENT OF OBJECTIVES FOR "OPERATION MOONVIGIL" (14)

	Yes	No	Yes and No	No Answer	
Number	58	11	4	7	80
Percent	72.5%	13.7%	5.0%	8.8%	

Of the eleven who felt their students did not achieve the objectives, four felt it was due to confusion over the institutions, and five felt it could be attributed to low ability on the part of their students.

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(12) ibid p. 127
(13) ibid p. 127
(14) ibid p. 130

Sixty percent of the respondents felt that the time and effort of the pupils spent in playing "Operation Moonvigil" was worthwhile.

WHETHER THE TIME AND EFFORT OF PUPILS WAS WORTHWHILE (15)

	Yes	No	So-So	Other	No Answer	
Number	48	10	7	13	2	80
Percent	60.0%	12.5%	8.8%	16.3%	2.5%	

A number of teachers indicated that they had gained new insights about their pupils as a result of their observations during the game. And 36.6% of the respondents indicated that they had gained insight into the class leadership roles. New information was learned about pupils in 17.1% of the cases and earlier opinions held by the teachers were confirmed in 7.3% of the cases.

With respect to their own role, 39 of the 80 responding teachers indicated that they found their role as observer difficult or very difficult; 26 felt that it was easy or very easy. Twenty seven of the 38 attributed their difficulties to not being able to intervene during the game.

Twenty one of the 80 teachers felt that there was a need to modify the game, and eight of the fourteen who elaborated on this point made specific suggestions with regard to clarification of game instructions.

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(15) ibid.p. 131

With respect to the future use of "Operation Moonvigil", 71.3% of the teachers would use it with another class; 96% would recommend it to other teachers.

MOONVIGIL CONSIDERED FOR USE WITH ANOTHER CLASS (16)

	Yes	No	Qualified Yes	No Answer	
Number	57	4	18	1	80
Percent	71.3%	5.0%	22.5%	1.3%	

MOONVIGIL RECOMMENDED TO OTHER TEACHERS (17)

	Yes	No	No Answer	
Number	77	2	1	80
Percent	96.0%	2.5%	1.3%	

Pupils' opinion with respect to likes and dislikes of the game were requested. The following categories of response emerged.

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(16) ibid p. 136

(17) ibid p. 136

REASONS WHY PUPILS LIKED THE GAME (18)

Response	Number and Percent Making Comment	
Fun-exciting/interesting/good experience,etc.	90	33%
Informative - learn about Moon/survival, etc.	32	12%
Learned to work in groups, liked groups, etc./ Co-operate	30	11%
Realistic - like pretending, etc.	26	9%
Liked following instructions /having things to do/jobs	22	8%
Food - good	21	8%
Change - "it was different" - Not School	19	7%
Learned about organization/society, etc.	9	3%
Learned about friends - gained insight, etc.	7	2%
Liked TV, Loopie, Mission Control	3	1%
Didn't like	7	2%
Other	10	4%
	276	

REASONS WHY PUPILS DISLIKED THE GAME (19)

	Number and Percent Making Comment	
No Cooperation	46	20%
Boring; not enough to do	35	15%
Food sticks	9	4%
Not enough time	8	3%
Didn't learn much	3	1%
Didn't have any dislikes	24	10%
Other	31	13%
No answer	75	32%
	231	

(18) ibid p. 157
(19) ibid p. 159

In response to the question "What do you think the people who made Moonvigil wanted you to learn?" The children answered as follows.

WHAT PUPILS THOUGHT MOONVIGIL INTENDED TO TEACH (20)

Response	Number and Percent Making Comment	
Co-operation/work together	89	31%
About the moon	52	18%
How it feels to be stranded	44	15%
Responsibility - self discipline	27	10%
Follow instruction, listen	24	8%
About organizations	14	5%
Learn - ourselves/others	7	2%
Other	21	7%
No answer	7	2%
	285 (*)	

The pupils were asked to indicate how much they liked playing the game. Seventy nine percent checked the category "very much" or "quite a lot"; 2.5% said "not too much" or "not at all".

PUPIL ENJOYMENT (21)

	Very Much	Quite a lot	Alright/ OK	Not too much	Not at all
Number	119	63	41	1	5
Percent	52%	27%	18%	.5%	2%

(20) ibid p. 160
(*) More than one response coded for some pupils
(21) ibid p. 162

The observations carried on in thirteen Metropolitan Toronto classrooms pointed more specifically to some of the difficulties encountered in playing the game.

It has been noted earlier in this paper that almost half of the responding teachers felt that the role the game demanded of them presented considerable difficulties.

The demands of that role were given a great variety of interpretations in the thirteen observed classrooms, ranging from a case where the teacher periodically left the room and failed to turn on the TV set, to a case where a teacher introduced a new and unintended operating rule into the game.

The majority of teachers stepped out of their observer roles occasionally to intervene during the gaming activities. A third of the teachers remained totally withdrawn. "It is interesting to note that none of the teachers who maintained this (latter) attitude consistently, even while remaining in the classrooms, were able to carry on meaningful debriefing". (22)

The observers report that five out of the ten teachers carrying on reflection displayed little ability to assist the pupils' understanding during the discussions. Three teachers were able to do so with success, and two with moderate success.

The time devoted by the teacher to debriefing and reflection activities varied from school to school. Of the original 13 classes, only 5 com-

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(22) ibid p. 21

pleted Reflection Day 1. One dropped out on Moon Day 5 and others during debriefing.

The classroom observations provided a further insight into some of the difficulties the children experienced with the game instructions. On Moon Day 1, three classes asked their teacher for assistance in division into groups. However, teachers in five classrooms felt that such assistance was necessary and provided it.

The Space Navigation Exercise continued to be a problem to the children, with only three out of the thirteen classrooms performing it correctly.

Hospitalization presented another challenge. Nine of the classrooms carried out this procedure with some variations of the original instructions. Four classrooms performed it according to their manuals.

Conclusions

The evaluation points out that "Operation Moonvigil" had gained a great deal of acceptability among its users at the time of the first broadcast.

To recapitulate, 71.3% of the teachers indicated that they would use the simulation with another class, and 96% would recommend it to their colleagues. Seventy-two percent of the teachers felt that Moonvigil had achieved its objectives with the class as presented in the Teacher's Guide; 13.7% felt to the contrary.

Those students who liked the simulation "very much" or "quite a lot"

constituted 79% of the users. Those who did not like it "too much" or "at all" represented 2.5% of the pupils.

In assessing "Operation Moonvigil" as a learning system, the study asked the participating teachers for the ratings of effectiveness of all the components of the simulation: the workshops, the accessory materials, the preinvolvement, gaming, debriefing and reflection activities.

The workshops were given a very high rating by 70% of the users in term of confidence gained, and by 60% in terms of competence gained.

The Emergency Procedures Kit and the Teachers' Guide received high support from 77% of the teachers.

Preinvolvement activities were considered very successful by 35%, and successful by 31%. Teachers were able to suggest alternative strategies in cases where they felt that the activities failed to achieve the intended objectives.

Individual ratings for each Moon Day showed that the activities of the first three days were successful, the next three moderately so, and the seventh day was unsatisfactory. This situation prompted some teachers to suggest that the simulation be shortened by one or two days.

The debriefing and reflection days presented a varied picture. The majority of those teachers who carried on these activities felt that they had achieved the desired objectives. However, there is reason to believe on the basis of the observers' reports and the questionnaire returns that a large number of teachers experienced considerable difficulties and often curtailed activities prematurely. (Teachers asked that debriefing and reflection be dealt with more extensively in the workshops).

There is no doubt that a simulation game such as "Operation Moonvigil" calls for great adjustments in the traditional teacher-pupil mode of classroom interaction. The difficulties experienced by both teachers and pupils in adapting to these new roles present the most formidable challenge to the success of the simulation.

Dr. Virgin describes these concerns in the conclusion to his study:

> They (teachers) felt the children needed to develop television listening and reading for action skills. Secondly, and to an even greater degree, increased group interaction skills are required. Many of the pupils expressed a lack of co-operative effort in groups as a major dislike in playing the game, thus substantiating the teacher's concerns. (23)
>
> According to the observer and the teachers' self-report, teachers had difficulty following the prescribed role as outlined in the Teacher's Guide. Some intervened to clarify instructions, so that the children would be able to accomplish their tasks. However, in a significant number of schools, it appears that intervention became interference while in other classrooms where the role was interpreted to be so strictly passive, the pupils became frustrated. Teachers playing Moonvigil must become sensitive as to when to intervene and when to allow the pupils to solve the difficulties on their own initiative. (24)

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(23) ibid p. 167
(24) ibid p. 167

In order to overcome these obstacles, the study makes the following recommendations.

1) More time and emphasis should be accorded to classroom preinvolvement activities prior to to the game in order to allow children to acquire some of the necessary skills to participate in the simulation.

2) The teachers' workshop should be modified to include a) a detailed study and discussion of the Teachers' Guide, b) suggestions and materials for specific preinvolvement activities, and c) experience which teachers can use to assist pupils to conceptualize.

3) The workshop should be mandatory so that teachers will be fully aware of the demands of the game and will take steps to avoid conflicting activities during Moonvigil.